

Capital 2 – One of the CEC's Zombie wind farms?

Objection to Capital 2 Time Extension Proposal

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This project has, despite plenty of time, failed to demonstrate commercial viability. Its past forecasts were wrong and its current self-serving ones have no substance. It was approved when research on wind farm Visual Impact (VI) was limited and, apparently, unknown to the Department. Published wind farm VI research is now much more extensive. Based on that research a comprehensive assessment of the original proposal would reject it – and even more the wind farm the company is trying to surreptitiously get approved via an ongoing series of modifications. For these reasons, the lapse of approval needs to stand. In addition, the Department has compromised itself in the way it has dealt with the modification requirement and the matter must go to the PAC to determine.

I object to the proposal to extend the consent time allowed for Capital 2 wind farm to be built.

It is wrong for this project and the surrounding community and it is wrong in principle for wind farms. And it would be particularly bad for it to be extended now while the Government is reviewing its wind farm guidelines, the result of which should be applied to all new proposals and all requests for modification.

The original consent included a very extensive period of 5 years to build the wind farm. There is no suggestion that it has been delayed by any act of God or frustrated by the NSW Government. The failure to build is down to either the incompetence of the management or a bad initial commercial judgment. There is absolutely no reason to believe either will change and the Department should not be rewarding either incompetence or bad commercial judgment – and particularly not at the expense of local communities.

An Apparently Uneconomic Wind Farm Proposal

Having claimed in 2010 that Capital 2 was “a commercially viable development”, the company has had plenty of time to prove it – and failed to do so. The consent condition about time to construct should be rigourously applied and the Department should not in any way engage in actions that may mislead on-market potential investors in the company about the economic viability of this project.

It is commonly understood that Capital 2 sought to get contracts from the ACT Government and failed. Despite being much closer to the ACT it lost out to other wind farms that could provide cheaper power from other states.

In its submission to the Department in relation to recently exhibited draft wind farm guidelines, the Clean Energy Council (CEC) included the statement: “while approved projects have statutory approval to be constructed, *some may never have an adequate economic case for construction.*” (*my emphasis*). It appears that Capital 2 may be one of those projects which the CEC believes will never have an economic case for construction. It should not be allowed to continue as a zombie approval.

Granting an extension encourages other speculators to propose economically marginal wind farm projects in the hope that at some indefinite time in the future conditions might change to their advantage, meanwhile they tie up huge tracts of land both of the hosts and adjacent areas which are removed from alternative developments due to the potential impact of the wind farm were it ever built.

The developer claims that if it is given more time it “will identify the optimal turbine technology for the project and make it more competitive” (p. 2). That obviously begs the question as to why the company did not do that in the 5 years it had. After all it already put forward modifications to increase turbine power and blade length, and had them approved. Did it not believe those were optimal turbine technology for the project?

The developer is obviously trying to claim that there will be bigger, more powerful turbines available in future which will somehow make Capital 2 competitive. Apparently it has not occurred to them, though hopefully it will to the Department, that approved competitor projects in better wind resource areas will also adopt those same more powerful turbines. So the Capital 2 project will still be left trailing behind the pack having not become any more competitive.

This proposal should be rejected. It is not an “administrative” change it is an attempt to tear up one of the most critical conditions of the original consent and of any consent.

The normal practice in business if you are considering making a large investment is to start to talk with and develop prospective customer relationships, understand the interest of those customers in taking your product and put yourself in a position to be selling very actively to them as soon as you have approval to proceed (if the project depends on government approval).

So Infigen has had seven or eight years to line up customers to take the output from Capital 2. The fact that it has failed to place its potential output in all that time demonstrates that the project is inherently uneconomic and was just a speculative proposal all along – unless the company’s directors want to assure the government that it was a simple matter of incompetence in running a business.

Recognition that the wind farm was sufficiently uneconomic that it could not get customers to justify being built within the five years allowed may well have some impact on Infigen’s share price. Its directors probably have an interest in avoiding that situation and getting an extension of time to hide from the market that seeking approval for Capital 2 was a poor decision in the first place.

Since most of the carry costs, if a time extension is granted, actually fall on the surrounding community rather than Infigen, it is quite rational for the directors to push that line. But it is not the job of the Department of Planning to prop up Infigen’s share price or to make decisions that help mislead the market while harming the local community.

The Department needs to think very carefully about the role it assumes in relation to on-market investors and their potential future losses on the company if it chooses to over-ride a critical explicit condition in the original consent as though it is endorsing the company’s claims of future improved business conditions.

Proponent Wants a Different Wind Farm

The company effectively claims it wants time to develop proposals for a wind farm substantially different from what was approved. Once the consent lapses, as it should, the company will be perfectly free to propose a comprehensive justification for the wind farm it is currently trying to surreptitiously create using a series of modifications whose impact is not examined as a whole.

Capital 2 wind farm has already sought and had approved modifications which increase the power and blade length of turbines. Nonetheless, the Infigen letter proposing the modification claims it wants “sufficient time to review the approved Capital 2 Wind Farm in line with improvements in turbine technology” (p. 1) and it wants to consider “newer, more efficient turbine technologies” (p. 2). That can only mean turbines of greater power.

The net result is that Capital 2 wants a wind farm dramatically different from what was approved in 2011, and its solution is to get there through an ongoing series of salami-slicing modification requests, some of which have already occurred and others which will occur if this unwarranted extension is approved.

The wind farm Capital 2 wants is not anything like what was approved. If Infigen really wants to propose such as wind farm for this area, it needs to start again, request new SEARS and justify its fundamentally different wind farm.

Fallacious Claims of New Certainty

Despite irrefutable evidence of the company's prior bad judgment, and its inability to compete against other wind farm proposals, the company wants the Department to accept its new, rosy, forecasts and reward the company despite its past failings. It is time to get Capital 2 out of the ring. There are plenty of other competitor projects to provide all the same benefits which Capital 2 claims to offer – but has failed to deliver.

The developer claims in its skimpy letter, “The uncertainty created by the Renewable Energy Target (RET) policy review was the most significant factor to freeze the large-scale renewable energy investment from 2013-15.” (p. 2) and then goes on to claim that uncertainty is now reduced.

Did the developer foresee that uncertainty when initially proposing Capital 2? Did they advise the NSW Government of that? Go back and look at the proposal lodged in July 2010. It claimed ¹:

“It provides additional generating plant to assist the National Electricity Market (NEM) to be able to meet forecasted demands; and

It is a commercially viable development that capitalises on a proved wind energy resource.”

The obvious question is if it was a “commercially viable development” as the developer claimed, why is it still unbuilt 6 years after making that claim to the NSW Government.

Nonetheless, during that time of “uncertainty”, the following wind farms were built or construction underway: Gullen Range, Taralga, Boco Rock, Macarthur, Mount Mercer, Ararat, Hornsdale, Snowtown Stage 2, Bluff Range, Grasmere, Mumbida.

During that period, the ACT Government held three reverse auctions for wind power. Out of those it contracted Ararat Wind Farm, Coonooer Bridge Wind Farm, Hornsdale Wind Farm, Sapphire Wind Farm and Hornsdale Wind Farm, Stage 2, Crookwell 2 Wind Farm and Hornsdale Wind Farm, Stage 3.

It is understood Capital 2 was a bidder and unsuccessful on each occasion – despite being located close to the ACT with comparatively low losses in power transmitted to the ACT.

It is noticeable that in the second auction Hornsdale Stage 2 bid \$77/MWh and Sapphire bid \$89.10/MWh ². Hornsdale Stage 3 won the third ACT auction with a bid of \$73/MWh. The second winner, Crookwell 2 Wind Farm bid \$86.6/MWh ³.

So the winning prices dropped between the second and third auctions. Presumably Capital 2 was still not competitive with either Sapphire or Crookwell 2, which were already 16% - 18% more than the South Australian bid.

¹ *Environmental Assessment Capital II Wind Farm Bungendore*, Volume 1, 8 December 2010, pp. 28-29.

² *Outcomes of the ACT's Second Wind Auction*, Media Release, ACT Government Environment and Planning, March 2016.

³ *200 MW Next Generation Renewable Auction*, Media Release, ACT Government.

It is also apparent from details in the ACT Government media releases that the winning wind farms would be using 3MW – 3.2MW turbines. The original approval for Capital 2 was for 3.0MW turbines but in July 2013 approval was granted for turbines up to 3.5MW. This was several years before the ACT wind power auctions. So Capital 2 was able to use turbines more powerful than those proposed by the winners of the ACT wind power auction. Thus its apparently weaker competitive position cannot be attributed to restrictions on turbine power. Consequently that experience offers no support for the notion that if just given (more) time to consider even more powerful turbines Capital 2 will somehow be able to redress a competitive disadvantage.

According to *The Australian*, in August there were “67 proposed or approved projects yet to be built, eclipsing the 58 in operation”, while there were 5 under construction⁴. So there is no shortage of competitors vying with Capital 2 for any further opportunities to build.

Back in 2010 Capital 2 claimed as justification that the project “provides additional generating plant to assist the National Electricity Market (NEM) to be able to meet forecasted demands”. Well, we all know how those forecasts turned out, as AEMO had to keep revising forecasts down. Yet the developers of Capital 2 offered them in support of their project.

In their flimsy claim for a time extension, the developer cites the Paris Agreement. Apparently the developer hopes the Department doesn’t keep up with international affairs. With the big users of wind power in Europe all struggling with massive consequent costs, the absolute linchpin of the agreement is the US. However, under the US Constitution a treaty cannot be made unless it is agreed by the US Senate. But President Obama did not take the agreement to the Senate because he knew it would not be ratified. So it has no legal binding power on the US and the next President, to be elected in November, can legally decide to tear it up in the interests of the US economy. If that occurs, it will have repercussions around the globe as other industrial countries try to protect their competitive positions and the costs of their industries.

And this is happening in the context of the globally lowest interest rates that have occurred in recorded history, because all major economies are still struggling 8 years after the Global Financial Crisis.

I mention these points not to make specific forecasts about the future but to highlight that Infigen’s current forecasts are as worthless as those made 6 years ago and are sustained by nothing except a hope that if the NSW Government extends their lottery ticket (at no cost to Infigen) that at some point they might get a windfall.

The claimed justification in Infigen’s letter is no justification at all. It is simply a plea that despite having failed in a competitive market the Government will now pretend the consent conditions were not actually conditions binding on the proposal and just there as a cosmetic inclusion of pretended rigour.

So far as all the rest of the usual guff about “public interest in renewable energy”, “economic benefits”, etc since there are 66 other projects hunting in a very overcrowded market, whichever of them is able to win a power supply contract (and they can’t all do so, since there are far more projects than needed to meet the RET) will do what Infigen claims Capital 2 will

⁴ “Policy wobbles putting the wind up investors”, Rebecca Puddy, *The Australian*, online, August 20, 2016.

in terms of providing renewable energy, economic benefits, contributions to the local economy.

The NSW Government may actually believe those things will be produced by whichever wind farms finally get built but it has no reason to favour Capital 2 over competitors. All of them have conditions they are supposed to be complying with, including time to construct. If they fail to comply, apply the conditions and let those which are most competitive, i.e. the ones that get built, provide the benefits the Government is seeking.

Visual Impact

Extensive, powerful new scientific research on wind farm visual impact (VI) changes the ground for VI assessment. Based on those studies, Capital 2 should never have been approved. It would be an action of extreme partiality in favour of the developer to extend a lapsed approval, thereby allowing this project to escape the VI rigour that would apply to any new wind farm proposal for this site.

At the time the proposal was approved, there was little published research on the visual impact of wind farms and the small amount then available was apparently unknown to the Department.

Since then the US Bureau of Land Management study was published in 2012⁵. That study, using multiple experienced observers, concluded that with 120m turbines, wind farms were visually *pre-eminent* up to 16 kms. Note that Capital 2 was approved with a turbine height up to 157m, which would extend the threshold for visual pre-eminence by 30% to over 20 kms – so very *visually pre-eminent* from the Federal Highway.

The BLM study was subsequently confirmed by visual impact research on off-shore wind farms, which produced basically the same threshold for visual pre-eminence of wind farms with turbines averaging 128m in height⁶. That scientific study was published in 2013, once again after Capital 2 was approved.

The wholly unimpeded views across Lake George are very similar to the situation with off-shore wind farms.

As it turned out, these research results were consistent with the results of a University of Newcastle (UK) study using ex-post reviews of 14 UK wind farms, which recommended a height related Zone of Visual Influence (ZVI) of 15 kms for 50m high turbines and 30 kms for 100m high turbines⁷.

That research led the well respected organisation Scottish Natural Heritage to recommend a ZVI of 45 kms for turbines of 150m to tip height⁸.

⁵ Sullivan, Robert G., et. al., 2012. *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes*. Argonne National Laboratory and the U.S. Department of the Interior, Bureau of Land Management. USA

⁶ Sullivan, Robert G., et. al., “Offshore Wind Turbine Visibility and Visual Impact Threshold Distances”, *Environmental Practice* 15(01):33-49, March 2013.

⁷ University of Newcastle (2002) *Visual Assessment of Windfarms Best Practice*. Scottish Natural Heritage Commissioned Report F01AA303A, p. 58.

⁸ *Visual Representation of Wind Farms, Version 2*, Scottish Natural Heritage, July 2014.

Subsequently it has become more widely known that laboratory research in Australia by Bishop in 2002, with the equivalent of 70m turbines (i.e. less than half the height proposed for Capital 2), concluded “In areas with completely transparent skies, visibility modelling out to 20 km – 30 km is justified, but effects beyond 20 km may be rare and depend on exceptional viewing conditions.”⁹

Research published by Molnarova and colleagues in 2012 demonstrated that “The addition of wind turbines was almost universally perceived as a negative impact on the landscape scene”¹⁰ but that people who are pro wind energy consider the impact of wind turbines on a landscape as less negative than do people who are tolerant of wind power or simply indifferent to it, and that these differences in perception are substantial and highly statistically significant.

In addition, the original proposal (and the Mod 2 proposal) relied on photomontages to convey the extent of prospective visual impact. The proposal stated ¹¹:

“A photomontage is a visualisation based on the superimposition of an image (ie turbine, building, road, landscape addition etc) onto a photograph for the purpose of creating a realistic representation of proposed or potential changes to a view. (Horner and MacLennan et al, 2006).

Photomontages have been utilised in this Visual Impact Assessment to assist in the impact assessment of the proposal.”

However, research on wind farm visual impact has explicitly found that photographic evidence tends to systematically underestimate the effect – whereas Infigen’s submission claimed it provided “a *realistic* representation of proposed or potential changes to a view”.

The BLM study reports

In the authors’ judgment, based on the many observations for this study, and comparison of the corresponding photographs and narrative records from the observations, the photographs consistently under-represent the degree of visibility observed in the field. While true to some degree for all of the photographs, this is particularly true for photographs of the facilities taken from longer distances. This is not simply an issue of viewing the photographs from the wrong viewing distance, a common and important problem when viewing visual impact simulations (Benson 2005). The photos are less sharp and show less contrast than was observed in the field, and of course, the photographs do not show blade motion, which clearly was a factor in visibility for many of the observations. For some of the long-distance photographs, the turbines are barely visible, but the narrative records for multiple observers describe them as plainly visible. Scottish Natural Heritage (2006) suggests that the camera’s inability to replicate the full contrast range visible to the human eye is a “key limitation of photographs in replicating the human experience.” ¹²

The same phenomenon was reported in relation to the offshore wind farm study:

“Our informal, qualitative opinion is that the photographs taken in the field generally show lower visual contrast levels than were actually observed during the visibility ratings. The photographs show lower contrast and less detail than was actually apparent in the naked-eye observations,

⁹ Bishop, Ian D, 2002. “Determination of Thresholds of Visual Impact: The Case of Wind Turbines”, *Environment and Planning B: Planning and Design* Vol. 29: p. 718.

¹⁰ Molnarova K., Sklenicka P., Stiborek J., Svobodova K., Salek M., and E. Brabec, “Visual Preferences for Wind Turbines: location, numbers and respondent characteristics”, *Applied Energy* 92 (2012): 269-278, p. 19.

¹¹ *Environmental Assessment Capital II Wind Farm Bungendore*, Appendix A, 8 December 2010, p. 7.

¹² Sullivan, Robert G., et. al., 2012. *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes*. Argonne National Laboratory and the U.S. Department of the Interior, Bureau of Land Management. USA, p. 43.

and they do not capture the blade motion that attracted the visual attention of observers in the field.”¹³

It is also consistent with observations in the University of Newcastle (UK) research which examined, on the ground, 14 UK wind farms and the EIS that had been prepared in seeking approval of those wind farms. On this point the study noted:

“We found that there was a general tendency to underestimate the magnitude of visibility in the ES descriptions compared to our judgements on site. This may be related to the frequent under-representation seen in photomontages (paragraphs 6.1.16 – 6.1.17). No doubt consultants use these for evaluation as much as other parties. If this tendency to underestimate magnitude is widespread, for whatever reasons, it does suggest that much of the published guidance and some of the implied judgements on significance in relation to distance will tend to be conservative. Many anecdotal and derivative distance-significance judgements may therefore need to be lengthened to compensate for underestimation caused by reliance on photomontage.”¹⁴

Thus three studies of the visibility of actual wind farms (and there are few, if any others, of comparable size and scope) have explicitly found that photographs tend to under-represent the extent of visibility of wind farms.

While the Capital 2 visual assessment used what has been common practice, the consistent evidence of scientific research has now shown that practice underestimates visual impact. All future wind farm visual assessments in NSW will need to accord with what has now been established.

None of this research was taken into account by the Department. Obviously both Sullivan studies and the Molnarova research were not in the public domain at the time.

When the PAC considered Capital 2 modification 2 for increased blade length, the evaluation was in terms of what was judged to be the incremental visual impact, not the absolute visual impact.

It is clear that given the published research now available to the Department it is very hard to justify the location of Capital 2 given the visual impact. Once that research became known to the Department it was not possible to rescind the approval on that basis – within the consent time condition.

However, extending the approval which is about to lapse because of the failure of the project to comply with consent conditions in relation to construction time is a wholly different matter. That would be a deliberate attempt to get around the rules and perpetuate an unsuitable project while allowing it to avoid the rigour that must necessarily be applied to any new project proposed for the same site.

Department Appears Compromised as a Supporter of Proposal

In its dealings with this modification proposal, the Department has created serious grounds for suspicion of partiality in favour of the developer. The matter must go to

¹³ Sullivan, Robert G., et. al., “Offshore Wind Turbine Visibility and Visual Impact Threshold Distances”, *Environmental Practice* 15(01):33-49, March 2013, p. 45.

¹⁴ University of Newcastle (2002) *Visual Assessment of Windfarms Best Practice*. Scottish Natural Heritage Commissioned Report F01AA303A, p. 55.

the PAC.

From the statement the Department placed on its web site, it appears the Department has expressed a view in favour of the extension even before receiving responses from the public. The Department describes the matter as:

"This extension will preserve the renewable energy and economic benefits of the approved Capital 2 Wind Farm and allow sufficient time for CWF2PL to review the approved Capital 2 Wind Farm in line with changing turbine technology and market circumstances."

That is an advocacy statement by the Department and indicates it cannot be regarded as acting impartially in reviewing the proposal for extension.

In addition, it appears that the planner, Anthony Ko, whom the Department assigned to this project has previously worked as a consultant on projects for Infigen (the Capital 2 owner). If this is true, it conveys a clear lack of impartiality.

A LinkedIn profile for an Anthony Ko says the following as one of his Aurecon projects: "Flyers Creek Wind Farm Part 3A EIS - Environmental Scientist (Infigen Energy)"

The Cherry Tree Wind Farm, also for Infigen, shows one Anthony Ko, Environmental Scientist, as author of the *Cherry Tree Wind Farm – Shadow Flicker and Blade Glint Assessment Report*

https://www.mitchellshire.vic.gov.au/downloads/Services/Building_Planning_Transport/Statutory_Planning/CTWF/07_-_Shadow_Flicker_and_Blade_Glint_Assessment.pdf

Perhaps these are a different Anthony Ko, though it is hardly a common name and finding two of them associated with wind energy proposals in Australia would be very surprising.

On the face of the evidence available, it appears the Department has learned nothing from the Gullen Range Wind Farm disaster (disaster for the people living nearby) about the need to not appoint in any official capacity individuals who have some private association with the proponent company and the project.

It is also noticeable that the application is exhibited only 6 weeks before the current consent lapses. Since the timing has always been known to the developer, this clearly indicates a belief on their part that the matter will be rubber stamped by the Department before 1st November.

From the outset, the Department has compromised itself on this proposed modification and should have no part in its determination. The matter must be referred to the PAC for a decision, in which circumstances I will provide a more detailed rebuttal of the proposal than is possible in the ridiculous two weeks currently allowed by the Department for a matter of such importance.

Conclusion

This project has, despite plenty of time, failed to demonstrate commercial viability. Its past forecasts were wrong and its current self-serving ones have no substance.

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apparently, unknown to the Department. Published wind farm VI research is now much more extensive. Based on that research a comprehensive assessment of the original proposal would reject it – and even more the wind farm the company is trying to surreptitiously get approved via an ongoing series of modifications.

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